CHAPTER 3.
DISASTER PREPAREDNESS

The objective of disaster preparedness is to ensure that appropriate systems, procedures, and resources are in place to provide prompt, effective assistance to disaster victims, thus facilitating relief measures and rehabilitation of services.

Disaster preparedness is an ongoing, multisectoral activity. It forms an integral part of the national system responsible for developing plans and programs for disaster management (prevention, mitigation, preparedness, response, rehabilitation, or reconstruction). The system, known by a variety of names depending on the country, depends on the coordination of a variety of sectors to carry out the following tasks:

- Evaluate the risk of the country or particular region to disasters;
- Adopt standards and regulations;
- Organize communication, information, and warning systems;
- Ensure coordination and response mechanisms;
- Adopt measures to ensure that financial and other resources are available for increased readiness and can be mobilized in disaster situations;
- Develop public education programs;
- Coordinate information sessions with news media; and
- Organize disaster simulation exercises that test response mechanisms.

PREPAREDNESS IN THE HEALTH SECTOR

As outlined in Chapter 2, the health sector forms an essential part of the intersectoral (national, regional, or local) system for disaster preparedness and response. Its organization and response mechanisms need careful planning, and should take into account the vulnerability of the country or a specific region, health policies and legislation on disasters, and the administrative and technical organization of the health sector's institutions. This includes coordination of mechanisms, development of technical plans and programs, training and research, and logistical and financial support.

RISK ANALYSIS AND DEVELOPMENT OF REALISTIC SCENARIOS

The health sector must have a clear understanding of the risk of the country or a particular region to potential major hazards, whether the cause is natural (geologic

or hydrometeorological events), technological (chemical or radiological accidents), social (violence, war, or subversion), or biological (large epidemics). Hazard analysis is carried out by governmental and/or private institutions and requires knowledge in such areas as seismology, volcanology, meteorology, structural engineering, and epidemiology.

Vulnerability to disease outbreaks should be evaluated, and data obtained on housing, living conditions, overcrowding, basic sanitation, and antecedents or history of endemic or natural foci of disease.

The health sector is responsible for using the data provided by specialized institutions to determine the vulnerability of its essential facilities (hospitals, health centers, and administrative buildings), and lifelines that guarantee the operation of these institutions, such as water service, power, communications, and transportation, and its own response capabilities and mechanisms. When analyzing vulnerability, organizational as well as physical weaknesses should be assessed in order to develop realistic plans for health scenarios following disasters.

The first step in evaluating risk is to estimate the probability of hazards occurring. It is important, when possible, to obtain multi-hazard maps (usually available from the scientific community, industry, the press, political authorities, and other sources) or to create them. The second step is estimate the vulnerability for each region or area. These data will be collected from the national disaster management agency and other entities and in consultation with engineers, architects, planners, civil defense staff, and others.

Some countries are developing geographical information systems (GIS) that can be of great assistance in estimating levels of risk. They are generally located in institutions outside of the health sector, but their synthesis of information is useful for all sectors and activities of the country. They are commonly used for development and planning processes, which includes disaster mitigation.

HEALTH POLICY AND LEGISLATION ON DISASTERS

While health institutions can develop individual disaster preparedness plans, it is desirable for countries to have a clear policy on disaster prevention and management. Legislation should require health institutions to develop preparedness and response plans, to institutionalize the plans as part of their normal activities, to use simulations to test the plans, and to assign financial resources for their development and maintenance. Hospital disaster plans should be required for a hospital's accreditation.

PREPARATION OF DISASTER PLANS

The following guidelines should be kept in mind when preparing health sector disaster plans:

1. Identify probable health scenarios based on the hazard and vulnerability analysis, and use this knowledge as a basis for creating a disaster plan. Decisions have to be made as to the resources that should be mobilized in planning for the most probable scenario as opposed to the "worst case scenario" (which is unlikely to occur in a lifetime).

2. List all probable events and likely health needs created by different scenarios. To be effective, planning must be directed toward specific and realistic objectives, such as how to cope with unsolicited assistance or how best to use available resources.
3. Plan for the main features of administrative response, such as the location and general responsibilities of key officials. Do not complicate plans with detail. Allow for ad hoc and improvised responses to fill in gaps.
4. Subdivide plans into self-sufficient units. Adequate response to a disaster does not usually require specialized staff (e.g., hospital administrators) to be familiar with all aspects of the plan.
5. Disseminate the plan widely. People with roles to play in the disaster plan must be very familiar with it, which demands considerable training. Many good plans have failed during emergencies because of inadequate dissemination and practice.
6. Include exercises to test the plan periodically. Plans are not realistic if they are not tested. The absence of actual testing will largely negate even the best of abstract plans.
7. Include systems for early warning and information so that the public can adopt self-protection measures or reach temporary shelters if evacuation is necessary. Public information should come from authoritative and competent sources and have well defined formats so that messages are clear and precise. Warning systems for different types of disasters should be standardized at the national level and tested during simulations. The public must be aware of how warning systems work prior to the onset of an event.
8. Compile an information package with basic demographic information, including epidemiological data. The package should include topographical maps showing roads, bridges, and rail lines; the location and basic layout of health facilities; and other information that would assist in response. The package should be stored so that it can be rapidly retrieved in case of disaster. Where Geographic Information Systems (GIS) exist, they can be very useful; when they are maintained by other ministries or sectors, they can be shared.

COORDINATION MECHANISMS

If the health sector's disaster preparedness plan is to be successful, clear mechanisms for coordinating activities with other sectors and internationally must be in place.

The Health Disaster Coordinator is in charge of preparedness activities and coordinating plans with government agencies, including civil protection, armed forces, and foreign relations divisions; United Nations and other international agencies; Red Cross and other NGOs; and entities responsible for housing, communication, power, and water services. It is particularly important for the Health Disaster Coordinator to maintain ongoing communication and coordination with civil protection agencies and the PAHO/WHO Emergency Preparedness Program in each country.[1]

[1] For more information visit the PAHO Web site (http://www.paho.org/english/ped).

RELATIONS WITH THE MEDIA

The media play an important role in providing critical information to the affected population and the national and international audience in the event of a disaster. It is essential that authorities and media practitioners share an understanding of the objectives of information dissemination, as well as their respective roles in the disaster. Ongoing meetings or seminars between members of the media and disaster managers to clarify these roles and responsibilities are strongly recommended as part of disaster planning.

The media also play an essential role in educating the community about simple but critical measures that can be adopted to lessen the effects of disaster. The health sector should use the media to convey such messages on disaster preparedness and mitigation.

TECHNICAL HEALTH PROGRAMS

In the event of disaster, the health sector is responsible for treatment of casualties, epidemiologic surveillance and disease control, basic sanitation and sanitary engineering, oversight of health care in camps or temporary settlements for displaced persons and refugees, training, and logistic resources and support.

The responsibilities of the health sector in the aftermath of a disaster cover practically every aspect of normal pre-disaster operations. No technical department or support service can remain uninvolved or immobilized in case of a major disaster. Preparedness should address all health activities and disciplines and cannot be limited to the most visible aspects of mass casualty management and emergency medical care. To reinforce these responsibilities, a standing advisory committee (see Chapter 2) comprising specialists from health disciplines should meet on a regular basis to review preparedness activities and disaster plans in their respective areas of operation.

Treatment of Casualties

Prehospital and hospital plans for treating casualties are essential in organizing health services for disaster situations. The prehospital disaster plan focuses on search and rescue of victims requiring either specialized medical personnel or equipment, as in the case of persons trapped in buildings collapsed by earthquakes. Reliance on external assistance for search and rescue (SAR) activities should be minimized; instead, the health sector should promote the development of a national search and rescue capacity familiar with modern techniques and equipment.

Other prehospital activities include: first aid administered at the disaster site and, depending on the severity of injury, providing immediate treatment. The injured are identified or tagged at the disaster site, and classified according to priority for treatment and/or transfer to hospital. This process, known as triage, uses an internationally accepted color coding system (see Chapter 6). Because many health workers are unfamiliar with mass casualty management, it should be included in the medical and paramedical curricula in health schools.

The hospital disaster plan refers to the organization within a hospital, and focuses on: development of emergency plans, training, information, safety of patients and hospital personnel, evacuation, and availability of medicines and medical supplies for emergency treatment. The plan also addresses backup systems for communication, power, water supply, and transportation. It should form part of the hospital disaster response network, with clear procedures for patient referral and transport.

Identification of Bodies

Identification of bodies requires careful coordination with forensic medicine departments. The health sector should develop protocols for the identification and conservation of cadavers, death certification, and local and international transport, as necessary. Not all countries will find it practical to maintain expertise in this field, but health authorities should be familiar with the approach and establish contacts with potential sources of technical cooperation.

Epidemiological Surveillance and Disease Control

As discussed in Chapter 7, the type of disaster determines the levels of morbidity and mortality in a population. However, as part of the epidemiological surveillance system, it is advisable to institute warning mechanisms with a list of potential illnesses related to the type of disaster, establish a simple data collection system, and set up special programs such as those for vector control or control of diarrheal diseases or nutritional problems. This is not to be improvised. It is the responsibility of the epidemiology department to prepare itself and the health services to face this challenge at the time of crisis.

Technological accidents require a specialized surveillance system. Disaster planning should include prior designation of information centers and treatment for chemical poisoning and for exposure to ionizing radiation. Although not addressed in this publication, health workers must acquire special skills to respond to technological accidents.

Many different resources are available to support this training.[2] In addition to printed and audiovisual materials, an increasing body of work is available for consultation via the Internet.

Basic Sanitation and Sanitary Engineering

Basic sanitation and sanitary engineering include water supply and wastewater disposal, solid waste disposal, food handling, vector control, and home sanitation (see Chapter 8). The environmental health department and the water authorities should collaborate in developing contingency plans to ensure that these vital services are uninterrupted regardless of the magnitude of the disaster.

[2] Among other documentation centers, the Regional Disaster Information Center (CRID), a multi-agency center based in San José, Costa Rica, collects and distributes documentation relating to various aspects of disasters and disaster management. The CRID database is accessible through the Internet (http://www.disaster.info.desastres/net/CRID).

Health Management in Shelters or Temporary Settlements

The health sector is responsible for establishing basic health programs for temporary shelters, including a surveillance and control system for infectious diseases and nutritional surveillance. Children should receive appropriate vaccinations, and opportunities should be taken to provide basic health education to residents of temporary settlements.

Training Health Personnel and the Public

Health ministries in countries vulnerable to disasters should institute comprehensive in-service training programs. Specific training in first aid, search and rescue (SAR) techniques, and public hygiene for the population at risk should be given, and health officials should receive ongoing instruction in disaster management issues in their respective areas of responsibility. Health institutions should recruit professional staff with qualifications in disaster management to be in charge of disaster programs.

It is even more important, perhaps, for professional training institutions (universities, schools, etc.) to include disaster preparedness and response in their regular curricula or as part of continuing education programs.[3] The health sector should also encourage the development of research protocols to be applied during the disaster phase to identify factors that would contribute to improving disaster management, or to characterize the effects of a disaster on the health of the population.

Logistical Resources and Support

The health sector must have a budget for preparedness as well as disaster response activities. Mechanisms should be in place to allow for the quick mobilization of resources after a disaster, rather than using normal administrative procedures that are generally bureaucratic and time-consuming.

It is usually uneconomical for individual health facilities, particularly hospitals, to stockpile disaster relief supplies. Medicines with expiration dates, for example, should not be kept in large quantities. As part of preparedness planning, hospitals should join a network of national or regional institutions that maintain stocks that can be quickly distributed. These might include stocks in government or military warehouses. Chapter 12 outlines factors to consider in managing the receipt, inventory, and distribution of humanitarian supplies.

Simulation Exercises

Simulations should take place with the participation of health authorities and operative personnel. They are the only way to keep plans up to date, especially during prolonged periods when emergencies do not occur. There are a variety of techniques for conducting simulation exercises:

[3] This is taking place in several Central American training institutions, where the modular approach has been quite successful. These training activities have received the technical support from the WHO/PAHO Collaborating Center at the Universidad de Antioquia in Medellín, Colombia, which has strengthened links worldwide.

- Desktop simulation exercises (sometimes called “war games” in military jargon) use paper or computer-based scenarios to improve coordination and information sharing and test the decision-making process.
- Field exercises are more costly, but are highly visible and are popular because they actually test the activation of a disaster plan in simulated field conditions. While these exercises cannot realistically reproduce the dynamic and chaos of real life disasters, they are very useful when intended to detect the inevitable errors, lack of coordination, or deficiencies of the simulated response. A critical evaluation is the essential conclusion of these exercises. A perfect field exercise is one that exposes many shortcomings in the disaster plan.
- Drills are designed to impart specific skills to technical personnel (e.g., search and rescue, ambulance, firefighting personnel). A perfect drill is one that leads to a flawless repetition of the intended task under any circumstance.